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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PETER VAN VORIS, DOMINIC A. CATALDO,
and EDWARD S. LIPINSKY

Appeal 2010-002949
Application 10/698,722
Technology Center 1600

Before CAROL A. SPIEGEL, TONI R. SCHEINER, and STEPHEN WALSH, *Administrative Patent Judges*.

WALSH, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

This is an appeal under 35 U.S.C. § 134(a) involving claims to a method for applying a barrier to a structure to prevent the infiltration of

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

pests. The Patent Examiner rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

STATEMENT OF THE CASE

The invention concerns "the use of colloidal clays for adsorbing pesticide(s) or other bioactive active chemicals for producing polymeric coatings having extremely long useful lives of sustained release of active ingredients." (Spec. p. 1, ll. 15-17). According to the Specification, "[c]olloidal clays (e.g., nano-clays) adsorb more pest control agent than do standard clays and release the adsorbed pest control agent at a slower rate than do standard clays." (*Id.* at p. 5, l. 31 - p. 6, l. 2).

Claims 1-20, 23-26, and 29-35, which are all the pending claims, are on appeal. Claim 1 is representative and reads as follows:

1. A method for applying a barrier to a structure to prevent the infiltration of pest species, comprising the steps of:
   (a) providing a composition, which comprises:
      (i) a polymer component; and
      (ii) a bead formed from heated exfoliated colloidal clay and heated adsorbed pest control agent,
      wherein said bead is dispersed in said polymer component; and
   (b) applying a layer of said composition to said structure.

The Examiner rejected all the claims under 35 U.S.C. § 103(a) as being unpatentable over Kodama,[2] Van Voris,[3] Knudson,[4] and Beal.[5]

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[2] US Patent No. 5,747,519 issued to Hiroshi Kodama, et al., May 5, 1998.
[3] US Patent No. 5,801,194 issued to Peter Van Voris, et al., Sep. 1, 1998.
[4] US Patent No. 4,849,006 issued to Milburn I. Knudson, Jr., Jul. 18, 1989.
[5] US Patent No. 5,730,996 issued to Gary W. Beall, et al., Mar. 24, 1998.

Claims 2-20, 23-26, and 29-35 have not been argued separately and therefore stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

OBVIOUSNESS

The Issue

The Examiner's position is Kodama disclosed applying termite barrier compositions directly to structures to prevent termite passage. (Ans. 4). The Examiner found that Kodama disclosed applying the compositions by spraying or impregnating wood. (*Id.*). The Examiner also found that Kodama taught that its compositions may be formulated suitable to the object of use, i.e., as emulsions, flowable agents, and powders. (*Id.*). Additionally, the Examiner found Kodama disclosed that its compositions comprise pest control agents, including pyrethroids and adsorbent clays of bentonite. (*Id.*). According to the Examiner, Kodama did not expressly disclose that its bentonite clay was colloidal or formed into a bead with the pest control agent. (*Id.*). The Examiner also found that Kodama did not expressly disclose that its composition comprised a polymer. (*Id.*).

However, the Examiner found that Van Voris disclosed a barrier composition to protect against termites comprising polyurethanes and pyrethroids, including pyrethrins. (*Id.*). Additionally, the Examiner found that Van Voris disclosed that its composition comprised clays or carbon black to provide increased carrier surface area for an advantageous high concentration of pesticide in the polymeric barrier. (*Id.*). According to the Examiner, Van Voris disclosed the instant bead form "as combination of

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5 US Patent No. 6,540,741 B1 issued to Underwood et al., Apr. 1, 2003.

pesticide and carrier, with both heated to melt temperatures with polymers of polyurethanes." (*Id.*). The Examiner found that Van Voris disclosed applying the composition by "spraying … and bonding to structures as polymeric sheeting of the polymer/pesticide/carrier…." (*Id.* at 5).

The Examiner found that Knudson taught that a controlled, long term, slow release of pesticide is achieved by adsorbing the pesticide onto colloidal clays of smectitite and bentonite. (*Id.* at 5). The Examiner also found that Knudson's clay was colloidal due to its nanometer size. (*Id.*). According to the Examiner, Knudson's clays are the same as the clays of the instant claims and therefore "their features are also of the size and shape of the smectitite and montmorillonite clays of [Van] Voris and the instant claims." (*Id.* at 6). Additionally, the Examiner found that Beall disclosed colloidal clays intercalated with pesticides that may be naturally or readily exfoliated. (*Id.*). The Examiner found that Beall disclosed "concomitant heating of clays and pesticide" and that Beall's clays would provide "higher concentration, greater efficacy, thus, longer duration of effects, if applied to Van Voris polymeric barriers" (*Id.*). According to the Examiner, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Kodama's method and composition for applying a barrier layer to a structure with Van Voris' polymeric barrier to yield a pesticide barrier that provides long term protection. (*Id.* at 7). Further, the Examiner found that it would have been obvious for the skilled artisan to modify the combination of Kodama and Van Voris by using a colloidal clay as taught by Knudson and/or a heated exfoliated colloidal clay along with heated pesticide as taught by Beall to enhance the controlled

release of the pesticide from the composition and increase the loading and lifetime of a useful barrier. (*Id.* at 7-9).

Appellants challenge the Examiner's rejection by contending that: (a) Kodama failed to teach the use of a polymer system to form its composition and failed to apply a layer of the composition to a structure; (b) Van Voris had a controlled release that is too rapid, failed to use an exfoliated, colloidal clay and failed to apply a layer of the composition to a structure; and (c) Knudson taught away from using a polymer component, failed to teach a colloidal clay that was exfoliated, and failed to teach applying a layer of a composition containing beads. (App. Br. 10-11). Appellants do not address Beall's teachings. Appellants also submit the Declaration of Dr. Dominic A. Cataldo describing tests comparing the pest control agent and methods of Knudson with those of the subject disclosure to establish that the instant "thermal mixing method provides superior longevity." (*Id.* at 12).

The issue with respect to this rejection is whether Appellants have established that applying a barrier to a structure to prevent the infiltration of pest species according to the claimed method would not have been obvious to a person of ordinary skill in the art at the time of the invention over the combined prior art.

Findings of Fact

1. Kodama disclosed a method of controlling pests using a composition comprising a pest control agent and a clay, such as bentonite, as a solid vehicle. (Kodama Abstract and col. 3, ll. 46-47).

2. Kodama disclosed that the pest control agent of its composition may include "all kind[s] pyrethroids," including permithrin. (*Id.* at col. 2, ll. 4, 35).

3. Kodama disclosed that the method and composition may be used "for soil treatment as well as … to prevent termites from passing through a pesticidally treated layer." (*Id.* at Abstract).

4. Kodama disclosed that the method of the invention may be used to treat all kinds of wood by impregnating the wood with the composition of its invention. (*Id.* at col. 3, ll. 20-23).

5. Kodama disclosed that the composition of its invention "may be formulated into forms suited to the object of use, for example, an … emulsion, water solution, powder… or flowable agent." (*Id.* at col. 3, ll. 42-45).

6. Van Voris disclosed a method and barrier for protecting wood structures from the intrusion of insects. (Van Voris, Abstract).

7. Van Voris disclosed that its barrier comprises an insecticide and a polymer. (*Id.* at col. 14, ll. 58-65, Claim 1).

8. Van Voris disclosed that the polymer in its combination may be a polyurethane. (*Id.* at col. 13, ll. 20-40, Ex. 3, Table 3).

9. Van Voris stated that "[b]y incorporating the insecticides into the polymers, the insecticides can be released at such a rate that they will continue to be effective as toxicants or repellents for insects … for a prolonged period of time while … maintaining sufficient concentrations to prevent insect penetration through the exclusion zone." (*Id.* at col. 3, ll. 6-12).

10. Van Voris disclosed that its barrier may also include a filler and/or carrier, such as clay, that permits greater amounts of insecticide to be loaded into the polymer while assisting the controlled release rate of the insecticide. (*Id.* at col. 6, ll. 48-52).

11. Van Voris disclosed melting the insecticide and combining it with the filler to produce a mixture that is friable, i.e., "substantially dry or non-sticky flowable particles." (*Id.* at 6:59-63).

12. Van Voris disclosed that its composition may be formulated as pellets which "are easily applied to a wide variety of uses," such as being sprayed onto the surface of a structure. (*Id.* at col. 9, ll. 1-3, 43-45; Fig. 12).

13. Knudson disclosed controlled release compositions comprising a pesticide adsorbed onto an organoclay resulting in a product that released the pesticide slowly over a period of time. (Knudson Abstract, col. 1, ll. 6-9).

14. Knudson disclosed that the organoclays of its invention are modified clays that swell in many organic liquids and will form stable gels and colloidal dispersions. (*Id.* at col. 2, ll. 31-36).

15. Knudson disclosed that useful clays for its invention include bentonite, smectite-type clays, and montmorillonite clays. (*Id.* at col. 3, ll. 13-40).

16. Beall disclosed intercalates formed by contacting an activated layered material, such as smectite or montmorillonite clay, with an intercalant pesticide. (Beall Abstract; col. 10, ll. 36-46).

17. Beall disclosed that "the intercalate can be exfoliated easily." (*Id.* at col. 5, ll. 52; col. 18, ll. 59-65).

18. Beall disclosed that the "[i]ntercalate-containing and/or exfoliate-containing compositions can be in the form of a solid, or a viscous liquid or stable thixotropic gel...." (*Id.* at col. 6, ll. 42-44).

19. Beall disclosed that "[s]orption can be aided by exposure of the intercalating composition to heat...." (*Id.* at col. 13, ll. 10-11).

Principles of Law

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 406 (2007). "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 416 (2007).

A prior art reference is said to teach away from an Applicant's invention "when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

"[B]y definition, any superior property must be *unexpected* to be considered as evidence of non-obviousness." *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1371 (Fed. Cir. 2007). The existence of unexpected results is a question of fact and the party asserting such existence has the burden of

proving the results are, in fact, unexpected. *In re Geisler*, 116 F.3d 1465, 1469-70 (Fed. Cir. 1997).

Analysis

Appellants challenge the Examiner's obviousness rejection by asserting differences between the individual prior art references and the claimed invention. However, the test of obviousness does not end with a determination of the differences between the claimed subject matter and each prior art reference. Rather, such an analysis requires consideration of the combined teachings of all the references over which the rejection was made, along with the level of skill in the art at the time of the invention. *See In re Merck & Co. Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (each reference "must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole").

The Examiner rejected the claims as obvious over a combination of Kodama, Van Voris, Knudson and Beall. (Ans. 3). In challenging the rejection, Appellants have not addressed all of the prior art references. Notably, Appellants' argument omits any discussion of Beall's teachings concerning exfoliated, colloidal clays. (*See* App. Br. 10-21). Further, Appellants have not addressed the *combined references* or what that combination would have taught the skilled artisan at the time of the invention. (*See id.).* Consequently, we are not persuaded by Appellants' arguments that the claimed invention would not have been obvious over the combined prior art to a person of ordinary skill in the art at the time the invention was made.

In particular, Kodama disclosed a method for applying a barrier composition to a structure to prevent infiltration of pest species. (FF-1). In particular, Kodama disclosed "applying" a barrier by teaching that woods may be impregnated with the composition of its invention, which may be formulated into an emulsion, solution, powder or flowable agent. (FF-4, 5). Kodama also disclosed that its composition comprised a pest control agent, such as a permithrin pyrethroid, and a clay carrier, such as bentonite. (FF-1, 2, 4). Van Voris also disclosed a method and composition for protecting a structure from the infiltration of pests. (FF-6). Van Voris disclosed that its composition comprised an insecticide, a polymer, including polyurethane, and a fill and/or carrier, such as clay. (FF-7, 8, 10). Van Voris disclosed melting the insecticide and combining it with the filler to produce a mixture that is friable, i.e., "substantially dry or non-sticky flowable particles," (FF-11), which the Examiner reasonably equated to a bead. Additionally, Van Voris disclosed that its composition may be formulated as a pellet and "applied to a variety of uses," including being sprayed onto the surface of a structure. (FF-12). Van Voris explained the advantage of adding a polymer to a barrier composition, by stating, "By incorporating the insecticides into the polymers, the insecticides can be released at such a rate that they will continue to be effective as toxicants or repellents for insects ... for a prolonged period of time while ... maintaining sufficient concentrations to prevent insect penetration through the exclusion zone." (FF-12). Knudson disclosed the use of colloidal clays as carrier clays for pesticides. (FF-13, 14, 15). Beall disclosed exfoliated, colloidal clays (FF-16, 17, 18) and the advantage of heating the clays and pesticides (FF-19). Based upon these disclosures, we find that the Examiner reasonably concluded that the

combined prior art disclosed the limitations of the claimed invention and that the subject matter as a whole would have been obvious to a skilled artisan at the time of the invention. *KSR Int'l Co.*, 550 U.S. at 406. The Examiner's combination of the disclosed elements did no more than yield predictable results. *Id.* at 416.

Insofar as Appellants assert that Van Voris' method and composition produced a release rate that was too rapid (App. Br. 10), this argument is not persuasive because the instant claims to do not contain a limitation regarding the release rate of the pesticide from the barrier. Nor are we persuaded that Knudson taught away from using a polymer component. (*See id.*). Knudson does not mention polymers, and therefore cannot be said to have discouraged the use of polymers in a barrier composition, *see Gurley*, 27 F.3d at 553, or to have criticized or discredited incorporating a polymer into the combination.

Appellants have submitted the Declaration of Dr. Cataldo in support of their contention that the instant claims are not obvious. While extensively discussing Dr. Cataldo's Declaration in their Brief, Appellants have not provided any specific argument as to how the Declaration supports their position. For example, Appellants have not specifically asserted that the instantly claimed invention provided a superior property that was unexpected. Rather, Appellants merely introduce their discussion of the Declaration contents by stating that Dr. Cataldo "conducted comparative tests on the pest control agent of Knudson … and the subject disclosure." (App. Br. 12).

We recognize Dr. Cataldo's apparent expertise in the field of biochemistry and physiology, but accord little weight or evidentiary value to

his testimony. In his Declaration, Dr. Cataldo states that "[p]re-forming the colloidal clay adsorbed with pest control agent when both are heated and such pre-form dispersed (coated) with polymer will provide a longer life span for such pest control agent versus dispersing the colloidal clay adsorbed with pest control agent in a polymer coating." (Decl. 1). Dr. Cataldo also stated that "[i]n order to demonstrate this, the following tests were conducted by me and/or [sic] under his direct supervision and control:" (*Id.*). Dr. Cataldo described that the tests were conducted using the same active ingredient used in Knudson's examples and implied that the absorption in those examples occurred at ambient temperatures. (*Id.* at 9). Dr. Cataldo conclusions included that "[t]he usefulness of these pesticide products is closely related to the number of days in which the active ingredient remains in the end use environment. Our thermal mixing method provides superior longevity." (Appeal Br. 14).

However, Dr. Cataldo does not find that the asserted superior quality of the claimed method was unexpected. Nor do Appellants assert that the asserted superior property of the claimed method was unexpected.

The only prior art that Dr. Cataldo addressed was Knudson. However, as the Examiner explained, Knudson was included in the combination not "as the determinant exemplification of termite barriers, but rather as an exemplification of the advantageous use of colloidal clays as pesticide carriers." (Ans. 8). The Declaration does not discuss the teachings of Beall, Kodama, or Van Voris. As we have discussed, Beall was pertinent for disclosing the use of exfoliated, colloidal clays (FF-16, 17, 18) and the advantage of heating the clays and pesticides (FF-19). Thus, Dr. Cataldo's comparison of the instant invention only to Knudson's examples does not

persuade us that results were unexpected. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991) ("[W]hen unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art.").

We conclude that the totality of the evidence, including Dr. Cataldo's Declaration, weighs in favor of obviousness. *See Pfizer, Inc.*, 480 F.3d at 1371; *see also, Geisler*, 116 F.3d at 1469-70. Consequently, we find that the Appellants have not established unexpected results and therefore, have not rebutted the Examiner's prima facie showing that the claims are obvious over the combined prior art.

CONCLUSION OF LAW

Appellants have not established that applying a barrier to a structure to prevent the infiltration of pest species according to the claimed method would not have been obvious to a person of ordinary skill in the art at the time of the invention over the combined prior art.

SUMMARY

We affirm the rejection of claims 1-20, 23-26, and 29-35.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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